

IN THE U.S. PATENT AND TRADEMARK OFFICE

Applicant: Kazuo IWAI

Conf.: 3472

Appl. No.: 10/006,569

Group: 3643

Filed: December 10, 2001

Examiner: J. Olszewski

For: METHOD OF STERILIZING POULTRY MEAT

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DECLARATION UNDER 37 C.F.R. §1.132

Assistant Commissioner of Patents
WASHINGTON, D.C. 20231

Sir:

I, Kunio ATARASHI, Ph.D., residing at Higashiosaka-shi, Osaka, Japan, hereby declares and states as follows:

1. That I am a member of JCS, Inc. I am thoroughly familiar with the contents of said Application, its prosecution before the United States Patent and Trademark Office and the references cited therein.
2. That I have been employed with JCS Inc. since the year 2003.
3. That I have been engaged in the studies of hinokitiol.
4. That the following experiments were conducted by myself or under my direct supervision and control in order to demonstrate that poultry meat sterilized with an aqueous hinokitiol solution does not show whitening of poultry meat and generation of an irritable odor which are clearly seen in the poultry meat sterilized with an aqueous peracetic acid solution.

EXPERIMENTS

- I. Influence on Meat Color

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The surface color of raw chicken breast meat after the contact treatment with an aqueous hinokitiol solution or an aqueous peracetic acid solution was visually observed and the state of the breast meat was recorded in a photograph.

Specifically, as the test samples, an aqueous hinokitiol solution having a hinokitiol concentration of 125 ppm or 1000 ppm and an aqueous peracetic acid solution having a peracetic acid concentration of 100 ppm, 500 ppm or 1000 ppm were used.

The contact treatment of the chicken breast meat with the test sample was carried out as follows. An about 20 g piece of meat was immersed in a 100 mL of the test sample at room temperature (about 25°C) for 5 minutes. As a control, the same procedures were carried out except that water was used in place of the test sample.

The surface color of the breast meat before the contact treatment was previously visually observed and at the same time the state of the breast meat was recorded in a photograph. In addition, the surface color of the breast meat was observed immediately after (0 hour) the contact treatment, 0.5 hours after, 2 hours after, 4 hours after and 24 hours after the contact treatment, and at the same time the state of the breast meat was recorded in a photograph at each stage. Further, 24 hours after the contact treatment, the breast meat was cut, and the cut cross section was visually observed and also the state of the cut cross section was recorded in a photograph.

After 0.5 hours from the contact treatment, the breast meat was wrapped with a clear-plastic wrap before the observation and stored at 5°C.

II. Influence on Meat Odor

After 4 hours from the contact treatment as noted in "I. Influence on Meat Color," the odor of the chicken breast meat was evaluated by five panelists (A to E).

The panelists were evaluated on the odor of the chicken breast meat in accordance with the following evaluation criteria:

- : no irritable odor is smelled at all;
- +: an irritable odor is smelled when the breast meat is brought right in front of one's nose;
- ++: an irritable odor is smelled at a distance 20 cm away from the breast meat; and
- +++: a strong irritable odor is smelled at a distance 50 cm away from the breast meat.

In addition, the panelists also evaluated on the rotten odor of the chicken breast meat.

RESULTS

I. Influence on Meat Color

The photographs recording the states of the breast meat before the contact treatment with the test sample, immediately after (0 hours) the contact treatment, and 0.5 hours after, 2 hours after, 4 hours after and 24 hours after the contact treatment are shown in Figures 1 to 6, respectively. Also, the photograph recording the state of the cut cross section of the breast meat at 24 hours after the contact treatment is shown in Figure 7.

In the followings, the breast meat which was subjected to a contact treatment with an aqueous hinokitiol solution is named the hinokitiol group, and the breast meat which was subjected to a contact treatment with an aqueous peracetic acid solution is named the peracetic acid group.

The breast meat immediately after (0 hours) the contact treatment with the test sample was slightly whitened in both groups as compared to that before the contact treatment. The degree of whitening was of the same level as that for the control (water) (not shown). Therefore, this degree of whitening is presumably due to the contact with water.

In the breast meat 0.5 hours after the contact treatment, no advancement of whitening was found in the hinokitiol group. On the other hand, the advancement of whitening was found in the peracetic acid group. The degree of whitening became stronger in a concentration-dependently manner of peracetic acid.

In the breast meat 2 hours after the contact treatment, no advancement of whitening was similarly found in the hinokitiol group. On the other hand, a further advancement of whitening was found in the peracetic acid group.

In the breast meat 4 hours after the contact treatment, no advancement of whitening was similarly found in the hinokitiol group. Also, the degree of whitening of the peracetic acid group is of the same level as that 2 hours after the contact treatment, so that no advancement of whitening was observed.

In the breast meat 24 hours after the contact treatment, no advancement of whitening was similarly found in the hinokitiol group. On the other hand, a notable advancement of whitening was found in the peracetic acid group. In the state of the cut cross section of the breast meat 24 hours after the contact treatment, although whitening was not found in the surface portion in the

hinokitiol group, whitening was clearly observed in the surface portion in the peracetic acid group, forming a white layer. The degree of whitening became stronger in a concentration-dependently manner of peracetic acid.

FIG. 1

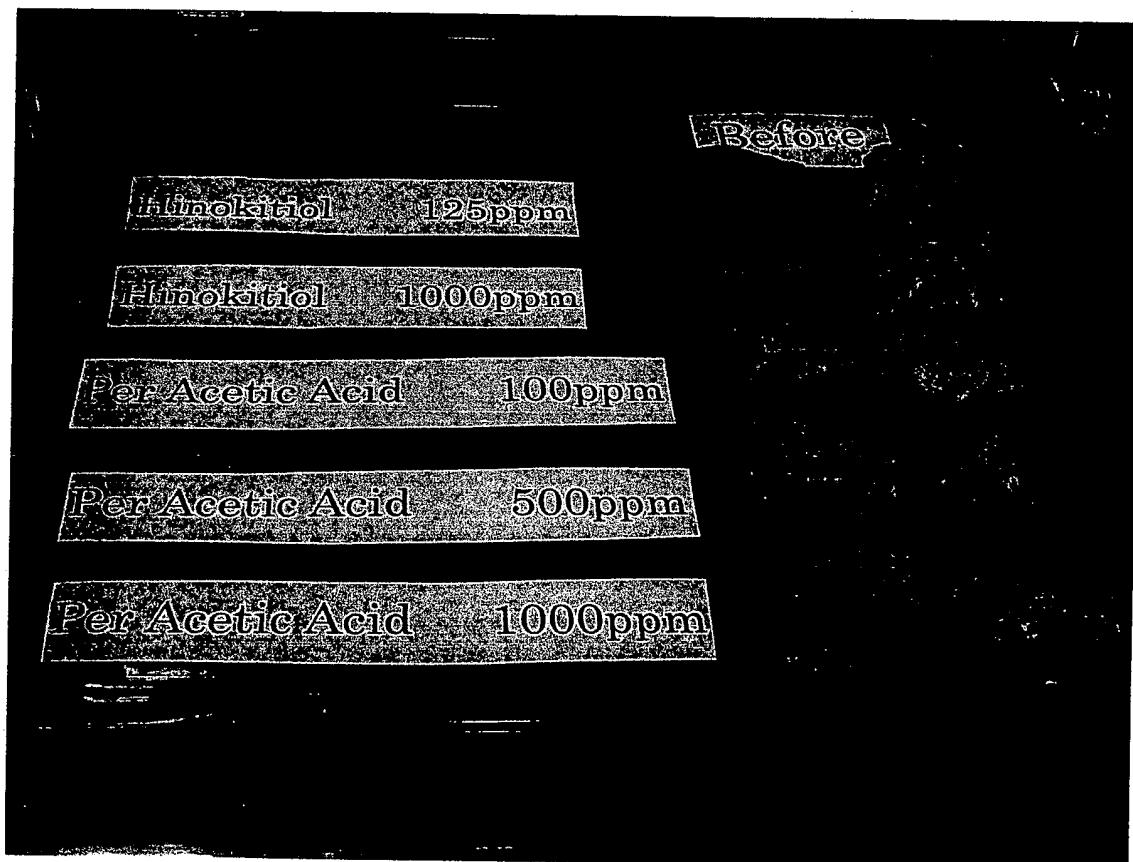


FIG. 2



FIG. 3



FIG. 4



FIG. 5



FIG. 6



FIG. 7



II. Influence on Meat Odor

The results for evaluation on the odor of the chicken breast meat 4 hours after the contact treatment with the test sample are shown in Table 1.

In the hinokitiol group, no irritable odor or rotten odor was smelled, which was the same as that of the control (water) (not shown). On the other hand, in the peracetic acid group, although no rotten odor was smelled, the irritable odor became strong in a concentration-dependent manner. Particularly when the peracetic acid concentration is 1000 ppm, the irritable odor became too strong, intolerable for edible purposes.

Table 1

Test Sample	Panelist	Irritable Odor	Rotten Odor
Hinokitiol 125ppm	A	—	—
	B	—	—
	C	—	—
	D	—	—
	E	—	—
Hinokitiol 1000ppm	A	—	—
	B	—	—
	C	—	—
	D	—	—
	E	—	—
Peracetic Acid 100ppm	A	+	—
	B	+	—
	C	+	—
	D	+	—
	E	+	—
Peracetic Acid 500ppm	A	++	—
	B	++	—
	C	++	—
	D	++	—
	E	++	—
Peracetic Acid 1000ppm	A	+++	—
	B	+++	—
	C	+++	—
	D	+++	—
	E	+++	—

DISCUSSION

When the poultry meat is sterilized with an aqueous hinokitiol solution, it can be seen from Figures 1 to 7 that no whitening of the poultry meat is caused, and from Table 1 that there is no generation of an irritable odor in the poultry meat, contrary to the poultry meat sterilized with an aqueous peracetic acid solution. Therefore, if the aqueous hinokitiol solution is used, the poultry meat can be sufficiently sterilized without lowering its commercial value.

5. As can be seen from the experiments, the poultry meat can be sufficiently sterilized without changing the color of the poultry meat or accompanying the generation of an irritable odor according to the present invention. With regard to U.S. Patent Nos. 5,632,676 and 6,165,964, these effects of the present invention are unexpected.

6. The undersigned petitioner declares further that all statements made herein of his own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of this application or any patent issuing thereon.

7. Further declarant saith not.

Kunio Atarashi
Kunio ATARASHI

Sep. 30, 2003.
Date